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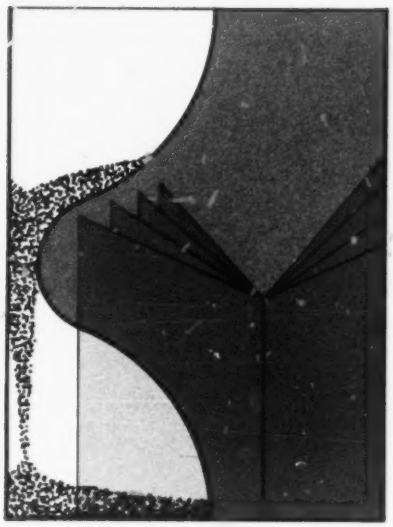
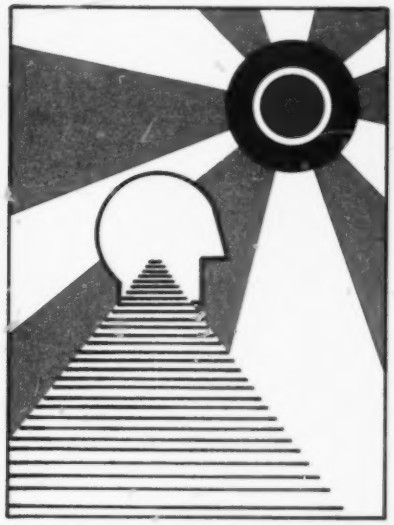
ABSTRACT

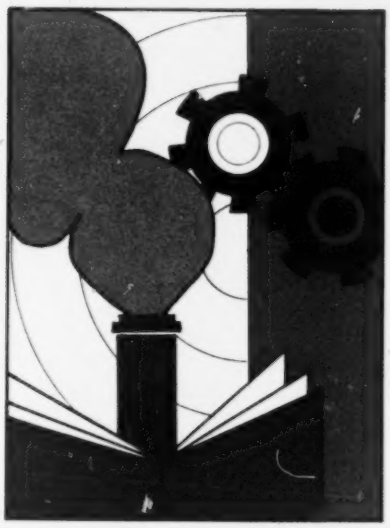
The best sources of information about educational requirements for careers in information sciences are the institutions that offer training programs in such careers. The American Society for Information Science maintains a file of information on institutions offering training programs in information science. This pamphlet is intended for general use only since the various institutions emphasize different aspects of the field of information in educating their students. Most universities now offering programs in information science provide such training at the graduate level. Several colleges and universities, however, are currently establishing majors in information science and it is expected that an increasing number of universities will offer such undergraduate programs in the near future. Organizations concerned with information science discussed are: American Society for Information Science (ASIS), American Library Association-Information Science and Automation Division (ALA/ISAD) and Association for Computing Machinery (ACM). (Author/NH)



"... more time and effort are being devoted to the selection of what is to be read than to the actual reading."
*Science*, March 1967



How can mountains of data now available to people be channeled in a way so that they can make better decisions concerning their *condition* —human and environmental?



Will books, newspapers, journals remain with us and in their present form, in light of present and future technological developments?

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# SCIENTISTS
# SPECIALISTS
# TECHNOLOGISTS

# A CAREER IN
# INFORMATION

A Profession of Information: What is It?
Education for a Profession in Information
Core Areas for the Study of Information
Professional Levels
Technical Areas of Special Interest to the Information Professional
Other Professional Disciplines
A Career in Information: Its Future?
American Society for Information Science (ASIS)
American Library Association—Information Science and Automation Division (ALA/ISAD)
Association for Computing Machinery (ACM)

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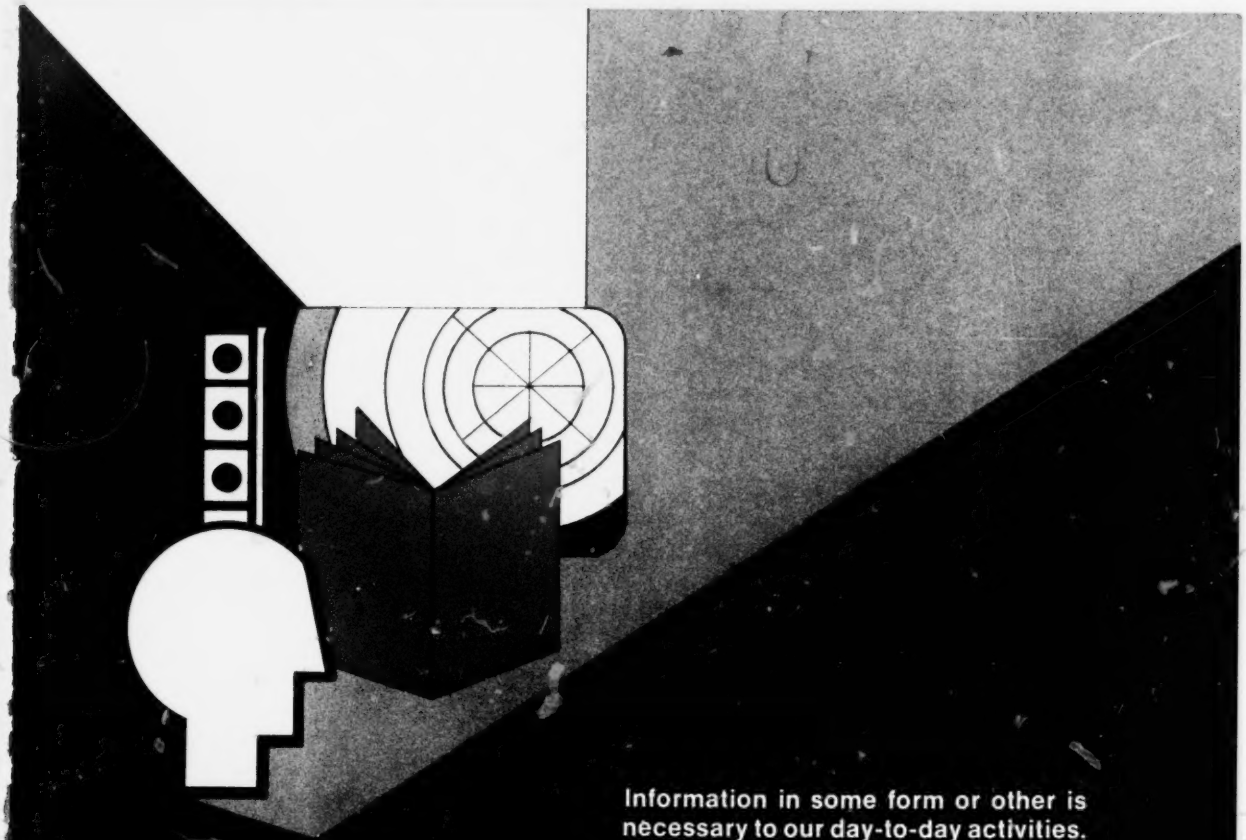


# A PROFESSION OF INFORMATION: WHAT IS IT?

Information in some form or other is necessary to our day-to-day activities. The big problem is that, like everything else in this day and age, there is so much of it and it comes through in so many different forms—books, TV, radio, newspapers, etc. Day by day, it continues to mount. Consequently, people who depend on it to make decisions and to act become confused. They leave out some information which they shouldn't. Some information never comes to their attention. The problem is serious. We are building bigger libraries, we are making available more knowledge, but we just don't know its effects. The critical thing about it all is that we really don't have enough trained people to deal with these problems. The problem will become more serious in coming years and we need to have individuals trained to deal specifically with information. These people are the professionals of information.

The decades ahead promise to be richer in information, creating greater demands for new jobs and new demands on established jobs. Thus, at any given time, the best source of information about educational requirements for careers in information science is the institutions that offer training programs for such careers. The American Society for Information Science, 1140 Connecticut Avenue, N.W., Washington, D.C. 20036, maintains a listing of properly accredited institutions offering training programs in information science. What follows is to be used only in a general way since the various institutions emphasize different aspects of the field of information in educating their students.

As in other fields, information science is organized into subject-matter areas, each with carefully chosen methods of study and focuses of concern. Some traditional academic programs in this field stress technology. Other programs, while still requiring a sound understanding of information technology, are beginning to regard the human aspect as the key to understanding the phenomenon of information. Information systems which maximize benefits for mankind, rather than those which serve as instruments for more and more technology, must be developed. People are responsible for the technology they develop and must concern themselves with the applications and uses of the forces they unleash on their environment.

# IN INFORMATION

### High School Preparation

No special high school preparation is required for entrance into the profession of information. The curriculum in a four-year high school academic program is adequate preparation.

### Scope of Academic Programs

Most universities now offering programs in information science provide such training at the graduate level. Several colleges and universities, however, are currently establishing majors in information science. A student reading this pamphlet can expect an increasing number of universities to offer such undergraduate programs in the very near future. Meanwhile, an undergraduate major in computer science with a minor in the behavioral sciences, or vice versa, would be recommended in the absence of an established major in information science. Requirements for entrance to graduate programs vary, but most require knowledge of mathematics up to calculus, statistics, some knowledge of computers and programming. The Graduate Record Examination is often required.

## CORE AREAS FOR THE STUDY OF INFORMATION

- **BEHAVIORAL THEORY** focuses on the needs of information users and how they function in an information-rich environment. Emphasis is placed on human interaction with computers, displays, etc. Also examined are such topics as the sociology of information systems, human communications, man-machine communications, human information processing, decision processes, and man-machine information processing.

- **TECHNOLOGY AND SYSTEMS** concerns the technology that helps people deal with information and its transfer. Included in this area are systems management, maintenance and evaluation.

- **BASIC SCIENCE** includes the intellectual tools (methods) for dealing with information as a human experience. Such tools exist in mathematics, statistics, philosophy and linguistics.

- **COMPUTER SCIENCE** concerns itself with the efficient use of computers. This includes representation of data, and the manipulation of these representations to achieve certain goals such as the calculation and production of payrolls.

# PROFESSIONAL LEVELS

**Information Scientist (Informatologist)** is the person who works in the laboratory testing old and new ideas about how people use data and form information. He or she is very much interested in how computers and other devices can be used to cope with data, to extend intelligence and deal with problems that need to be solved. The laboratories can be located at a university or college, in an industrial plant, in a governmental facility, or in a library. A person needs a bachelor's degree plus four or more years of graduate training. As a Ph.D., he or she can expect to earn anywhere from $12,000 to $30,000* depending on years of experience and the reputation he or she builds up.

**Information System Specialist** is the person who recommends how the information environment such as an assembly of computers, picturephones, libraries, and people can be organized to provide the data man needs to get information quickly and efficiently. A bachelor's degree plus one or two years of graduate training is needed. One can expect that the salary range be from $7,000 to $15,000, depending on experience.

**Information Technologist** is the person who is skilled in assembling information environments to insure that they function effectively. In this role, he or she is both an efficiency expert and a teacher. As an efficiency expert, he or she makes sure that people and machinery are working together. As a teacher, he or she guides the human element in getting the most out of the machinery. A bachelor's degree is required, with a major in information science. The salary range is from $5,000 to $10,000.

*All the salary ranges are approximate in the absence of data for the specific titles in question. The approximations are based on salaries in related professional areas with equivalent educational backgrounds.

**The following sketches are attempts to provide examples of the foregoing specialty levels.**

Information Technologist in Private Industry (BS)

James Brown, information technologist . . . He works in an industrial information center which has an IBM 360/50 computer, a number of visual-static as well as dynamic displays, a picture-phone, a large-surface static display showing distribution of company outlets and their resources. He helps to display and update daily data on company operations (sales, production, etc.)... Assists company personnel in using the center . . . Develops training courses to help insure best use of the system.

Information Technologist in Education (BS)

John Sanders, information technologist . . . He works in a large urban public school system . . . Answers questions concerning the most efficient way of organizing information on displays (blackboards, slide projectors, TV screens) . . . how to make sure that the students use these devices in helping them with their lessons.

Information Technologist (BS)

Miss Janis tries to determine what a person (student, professor, executive, general) needs in the way of data, how the data can be arranged to help the person in the job. She interviews the user, conducts surveys, prepares courses which will help the person use the computer, displays, etc. She helps the information system specialist in conducting preliminary system design studies, checks what is not available as far as technology is concerned.

Information System Specialist in Government (MS)

Mr. Green tracks down how data is acquired and processed among various people and activities of an urban government office. He wants to make sure that the persons who need the data get it when they want it and in the form they can use. He checks carefully with the people who are going to use the system to understand the decisions they have to make and the problems they have to solve . . . their difficulties and how often they occur. With this understanding he sketches out a set of equipment and procedures which will establish the environment. He also provides for ways of testing the environment to make sure that the system is doing what it should be doing in providing the service required. He also provides for the training of people to use the system.

Information Scientist in Industry (Ph.D.)

Dr. Smith is exploring how lasers can provide Mr. Jones with three-dimensional presentations of graphs showing how labor costs, production, and inventory relate to each other. Dr. Smith wants to find a principle about laser displays related to the ability of man to use three-dimensional graphic information.

Information System Specialist in Private Industry (MS)

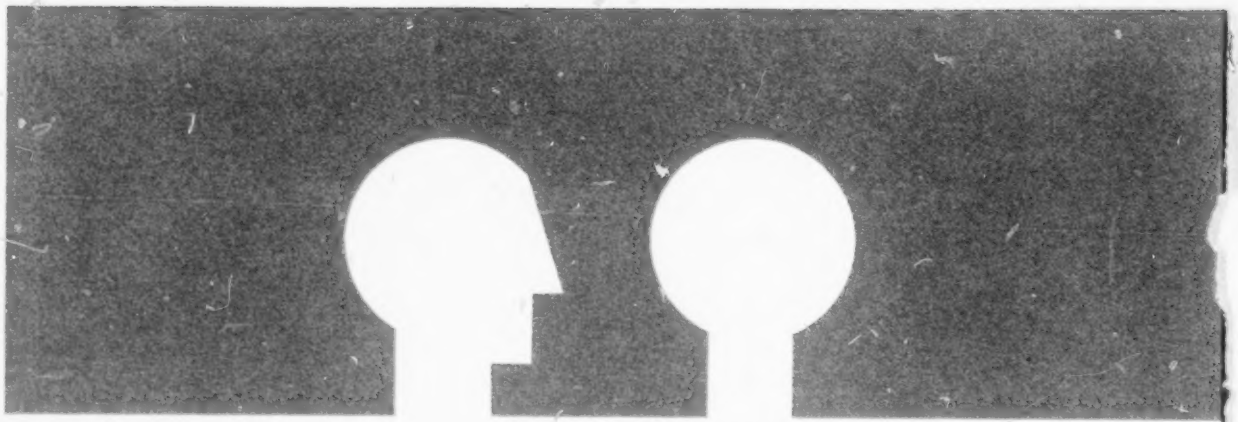
Peter Ford, information system specialist, works as a systems designer and engineer who is also a specialist in information . . . He analyzes a specific problem and the current flow of information from one user element to another . . . He identifies critical areas where data are transformed in information useful in decision-making . . . He shows the time it takes to process a certain amount of data, and how it gets from one person to another. He draws up a flow chart and then considers certain equipments and what they could do to help the situation . . . He then goes to management with the recommendation.

Information Scientist at a University (Ph.D)

Ann Soback, informatologist, employed by a large university as an associate professor of informatology . . . She teaches courses in man-machine information processing . . . Conducts research to find out why certain arrangements of equipment and procedures lead to better problem-solving than other arrangements; she is also interested in ways as to how computers, displays, and the human can be matched so that the human makes better decisions than can be expected without the computer.

Information System Specialist in a Research Company (MS)

Rodger Blake, information system specialist, is assigned as a member of a research team to develop an information system which will help detect water pollution at its source. Rodger works with sanitation engineers, chemists, and other specialists in designing and establishing the system.



# TECHNICAL AREAS OF SPECIAL INTEREST

**The information professional can specialize in certain technical areas. The following are examples for possible areas of specialization.**

### Informatics

Informatics is the engineering aspect of information systems. It involves finding the most effective use of machinery, such as computers, displays, picturephones, televisions, etc., which have been created to help handle increasing volumes of information.

Information system specialists have available the know-how of industry, government, and other agencies which have developed the equipment as well as the appropriate methods of analysis. Mathematicians, electronic specialists, systems designers and engineers also work with the information system specialist. Information system specialists use techniques like those used by the aeronautical engineer in testing whether or not an airplane will fly. By placing a plane or model in a wind tunnel, the aeronautical engineer finds out whether the design will work in real flight. Similarly, the information system specialist tests out the new information environment (system) by putting the idea (model) in a computer. In this way, he or she can test the various parts of the new environment and see if they work before making the recommendation that the environment or system be established or constructed.

### Behavioral Science

Psychologists for a long time have been interested in learning how the human senses process the data that gets to the brain. Many experiments have been done in this area. The professional in information is vitally interested in these studies as well as our understanding of human behavior in general. Moreover, the professional in information is directly involved in relating such understanding with our know-how about language, how we classify knowledge, how libraries, computers, displays, etc., help in these processes.

# OTHER PROFESSIONAL DISCIPLINES

**The information field includes a number of specialty areas or disciplines. These are often referred to as the information sciences—all of them are interested in information as a human experience. The following descriptions refer to some of these information-related disciplines.**

### Communications

How we transfer or give other people the information we have is the subject of a separate science, namely, communications science. This science deals with the means which are available in communicating to others. Communication science also involves those factors which help or retard the transfer of information from one person to another, or one group of people to another group.

### Computer Science

The computer is a very powerful tool which permits people to process data quickly, thus allowing man to test out ideas which previously would have taken too much time to be tested realistically. Because the information professional is interested in all machinery which can help man's mental facilities; he or she is especially interested in knowing how computer capability can be applied to his or her ends.

### Documentation

The presentation and processing of data (documents) and bodies of information (knowledge) has been one of man's cherished capabilities. The presentation of cultures has been influenced by the attention and skill applied to presenting data concerning human experience. The information professional is vitally interested in the use of preserved data, the rate of decay, the organization of archives, etc.

### Library Science

The library is a vital institution of any culture. It provides the facility as well as the human resources wherein a person can intellectually probe, relate, and discover the mysteries of the universe. Library science is relatively new among the sciences. Library science is vitally concerned with documentation, but it has become increasingly sensitive to how people use the library, the way materials are organized, their accessibility, etc. The library can be considered as one of the more important laboratories of the information professional.

# A CAREER IN INFORMATION: ITS FUTURE?

City governments are in desperate need for trained people who can help them with their information problems. Managing cities is getting to be more complicated day by day. Decisions which were made by the "the seat of the pants" can no longer be tolerated. There is equipment to help people who run the cities make better decisions. We need trained people to help bring such equipment to the decision makers and to insure that they use such equipment wisely. In the very near future, we can expect that almost all the large cities in the United States will have information systems. We will need people to build them and make them run properly.

Take another area, like medicine, for example. Information systems can be made available to help the physician make better diagnosis; surgeons to be aided during operations. Information professionals can provide the help these medical people need in providing better health care through better information processing.

Education is another area in which employment of the information professional can be expected to increase. In 1965, there were approximately 25 colleges and universities offering degrees in information science. Today, there are over 50, and this number is increasing at a healthy pace. These schools will need instructors and professors. Information science is only beginning to consider undergraduate training. Teachers will be needed for these programs.

Meanwhile, the government is considering establishing National Information Analysis Centers. This, together with the additional fact that libraries are looking more and more for colleagues who are information specialists to handle the complex problems of users and their needs, leads us to believe that the information professional will soon be included as a member in such environments.

All these indications portend an increasing demand for the information professional.

# ASIS

## AMERICAN SOCIETY FOR INFORMATION SCIENCE

"The ASIS is a non-profit, professional association organized for scientific, literary and educational purposes and dedicated to the creation, organization, distribution and application of knowledge concerning information and its transfer." Its membership is approximately 4,000. The Association holds an annual convention to facilitate and encourage communication and exchange of new knowledge among information scientists. It also sponsors various other meetings and activities which deal with the professional concerns and scientific interests of information scientists. The professional development and advancement of ASIS members are furthered through local chapters and special interest groups.

**Special Interest Groups**

The numerous interests and activities of information professionals are currently represented in the ASIS by 12 special interest groups.

**Student Membership**

Student membership is available to those who are regularly enrolled at a college or university and are interested in the fields of documentation, library and information science. Membership: annual fee, $10.

**Some Publications**

*Journal of the American Society for Information Science* (formerly *American Documentation).* Articles on information science.

*Handbook and Directory.* A directory plus general information on the history, purposes, organization, and services of ASIS.

*Annual Review of Information Science and Technology,* Chicago: Encyclopedia Britannica, Inc. A comprehensive critical review and synthesis of the year's developments.

*Newsletter,* published bimonthly by the American Society of Information Science and distributed to membership.

*Directory of Educational Programs in Information Science.* Lorna C. Wilkie (Ed.). This publication lists those colleges and universities that provide graduate training in information science. Directory can be obtained by writing to American Society of Information. For ASIS members it costs $4.50; non-members, $5.00.

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# ALA/ISAD

The American Library Association, in the pursuit of its object "to promote library service and librarianship," represents many types of libraries, information centers and professional activities. The activities of the Association related to information science have been assigned to the Information Science and Automation Division which "concerns itself with the development and the application of automated systems including systems design, electronic data processing techniques, and related technological developments, in all areas of library work."

**Standards**

ALA is concerned with both professional and technical standards. ISAD's activities in the area of professional standards focus on information science education. Bibliographic information interchange on magnetic tape, an identification number for serial publications, and a character set for computer-driven impact printer trains are among the technical standards set in part through ISAD member and committee work.

**Forums**

ISAD also offers the opportunity for discussion of problems in a structured setting as one of its important membership services. The Machine Readable Cataloging (MARC) users' discussion group is concerned with the use of cataloging records in the MARC format. The Committee on Library Automation (COLA) discussion group provides a forum on technical processing applications of automation in libraries. The Information Technology discussion group's area of interest is media, cable and closed circuit TV, and the interface of the library/media center with the educational community.

**Education**

Since 1968, ISAD's institute series has drawn hundreds of librarians from all over the world to learn about general library automation. The institute topics have included use of the MARC tape service, administration and management of library automation programs, telecommunications, microforms, and automation at the Library of Congress. Other in-service training seminars will be offered to both live and video-tape formats as needs become evident.

Formal education activities, primarily in information science curriculum development, take place in cooperation with ALA's Library Education Division and the Education Committee of ASIS.

The Association for Computing Machinery (ACM), founded in 1947, is dedicated to the development of information processing as a discipline and to the responsible utilization of computers in an increasing number of applications. Its more than 26,000 members operate in every sector of the computing sciences.

ACM has improved intercommunication among computing practitioners, and provides a viable and effective service to its members and to the general community.

**Chapters**

More than 180 chapters chartered by ACM serve as centers for the many activities of the Association. Scheduled programs are devoted to discussions of professional problems and surveys of computing topics. Chapter meetings and chapter newsletters provide pertinent information and systematically and economically enhance the professional competence of people in the computing field.

**Publications**

*The Journal of the Association for Computing Machinery* (quarterly) is primarily devoted to research and technical papers reporting basic advances in the computing sciences.

*The Communications of the ACM* (monthly) covers topics of interest to the computing profession, news and notices, official reports of the Association, guest editorials on professional problems, discussions of proposed standards, as well as timely technical material that contributes to the professional enrichment of the community.

*Computing Reviews* (monthly) comprehensively covers the literature on computing, and its ramifying applications.

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